ADSC/WSDOT Team Members

November 15th, 2007

Members In Attendance

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The meeting began at 8:30 AM. Also in attendance was David Jenkins from WSDOT Geotech. Mo introduced Mike Niemi as the new Assistant State Bridge Construction Engineer.

1. Constructability Review

BNSF West 39th Street O'xing

The geotechnical engineering on this project is being performed by Shannon & Wilson and the structural design is being performed by HDR. The soils conditions consist of alluvial silt and sand. The water table at the site is approximately 35-40 feet below ground line. The foundation will consist of five or six foot diameter drilled shafts that are installed about 80 feet below ground line. As an additional constraint, there are seven lines of rail road tracks located between Piers 2 and 3. The current design shows full-depth temporary casing. WSDOT is asking for feedback on shaft constructability.

Alan asked what was driving the use of full-depth casing. Looking at the soil profile, Alan believes that casing would be prudent to the water table. Below the water table, it appears the soils will be able to stand open with slurry. It was suggested that casing may be required by the rail road. The proximity of the drilled shafts to the rail road needs to be better described.

Alan also commented that a couple of the shafts appear to extend above the existing ground line. He suggested looking into this.

Action Plan:

- Alan to provide formal written comments to Mo within 10 days.

Fredonia Stage 2

This project is the next phase of the construction on SR 20 that began last year. One single span bridge on the Stage 2 work will be supported of 4-5 foot diameter drilled shafts. Because of downdrag considerations, these shafts will require full-depth permanent casing to approximately Elevation -51.

Alan asked for clarification on a conflict in the Summary of Geotechnical Conditions. Casing is called out as temporary in one spot and permanent in another. Jim C. confirmed that permanent casing is being required. Alan also asked why the Summary restricted driving of casing. The earlier Fredonia project allowed for driving casing. Alan suggested that the first Fredonia project be used as a template to put together the Stage 2 project.

Another suggestion made by Alan is that the State should evaluate if the permanent casing can be deleted by extending the length of the shaft. If an extra five or ten feet of shaft increases the vertical capacity enough to allow the permanent casing to be deleted, it will be worth considering.

Action Plan:

- Alan to provide formal written comments to Mo within 10 days.

2. Review/Approval of June 6, 07 Meeting Notes

Item 3 iii in the previous minutes made reference to "Waligorski's Chart". This should be "Jaworski's Chart".

Action Plan:

- Mark G. will update the previous meeting minutes accordingly.

3. Action Item Reports

i. Use of Salt Water in Slurries

Mo initiated the discussion by following up on one of the discussion items from the last meeting. One reason given for allowing saltwater slurry was the difference in density between saltwater and freshwater. Mo looked at the density effects for a 100-foot long shaft. With freshwater on the inside of the shaft and saltwater on the outside, approximately 2.5 feet additional head is necessary to compensate for the difference in density. Density doesn't appear to be an issue.

Mo suggested that this issue needs to be looked at case-by-case. If it is practical to use fresh water for the slurry, we should do that. If it is necessary to use salt water, WSDOT may need to look at requiring reinforcing bar with fusion bonded epoxy ASTM A 934. WSDOT's biggest concern is corrosion of the rebar.

Action Plan: WSDOT Geotechnical Branch will make a recommendation in the geotechecnical reports if they deem use of fresh water feasible.

Load Cell results

Gif mentioned that he had sent out load cell results that compare the oscillator with conventional drilled shaft methods.

Action Plan:

- Mo will review and place on future agenda if necessary

ii. Overnight Protection of Shaft/Threshold Limits of Slurry Loss

This was a follow-up to discussion at the last meeting. A concern had been brought up by Gif that the current Specification didn't adequately address slurry loss. Alan believes we are adequately covered by the Specification because personnel are required to be on site during the non-work period. If slurry loss is an issue, on-site personnel can add/modify the slurry as necessary to control loss.

There were no further comments on the Overnight Protection of Shafts specification.

Action Plan:

- No action needed.

iii. Soldier Pile Lagging Specification Final Draft

Mo handled this topic in Mike Bauer's absence. Mo thinks we are close to completing the final draft of this specification. Alan expressed further concern that the specification was being written to resemble the WAC rather than Jaworski's table. Mo asked the Geotechnical Office to take a look at Alan's concern. In the mean time, Mike B. will continue on working of the final draft.

Action Plan:

- Jim C. to look at whether the WAC or Jaworski's table should be used to write this Specification.
- Mike B. will continue to work on draft language for this Specification.
- Mo to put on agenda for next meeting.

iv. Proposed Changes to Section 3.03 – "Side Caving Responsibility"

Mike Bauer is working on this. Since he isn't present, this will be deferred to the next meeting.

Action Plan:

- Mo to put on agenda for next meeting.

v. Overnight Protection of Shafts

This item was covered in **ii**.

Action Plan:

- No action needed.

vi. Shaft Contractors' Prequalification Class

Mo sent the ADSC recommendations to Ken Walker at Ad and Award. Ken will be establishing a new class so drillers can bid on projects as Prime Contractors.

Action Plan:

- Mo to provide update at next meeting.

4. Proposed Vibration Specification

The current WSDOT Standard Specifications provide requirements to protect fresh concrete from vibration. Mo pointed out that the Drilled Shaft Special Provision is redundant because it provides a different set of guidelines to protect shaft concrete. Mo handed out a copy of the Standard Specification requirements as asked for thoughts on whether this could replace the Special Provision requirements.

The initial feedback from the Task Force Members was that the Standard Specification requirements seem to be OK. The equipment descriptions will need to be updated to adequately describe drilled shaft construction equipment. ADSC will review and provide further comments at the next meeting.

Action Plan:

- Alan to coordinate ADSC review of Standard Specification Section 6-02.3(6)D.
- Mo to include this item on the agenda for next meeting.

5. PGA Access Hole Pipe Reinforcing

Since Mark E. isn't at the meeting, this item will be deferred to the next meeting.

Action Plan:

- Mo to include on the agenda for the next meeting.

6. Payment for Excess Temporary Casing, Section 3.03B

The Drilled Shaft Special Provisions allow the Contractor to provide additional temporary casing, but it isn't clear if the Contractor is entitled to payment for additional casing. After some discussion, two different cases were identified. If the temporary casing is *necessary* to maintain hole stability, the Contractor should be compensated for this casing. However, if the casing is strictly for *Contractor convenience*, no additional compensation would be warranted.

Mo will update the Special Provision to clarify that temporary casing that exceeds the contract requirements and is installed for Contractor convenience will not be compensable. The Task Force agreed.

Action Plan:

- Mike to update Section 3.03B.

7. New Non-destructive Testing

WSDOT recently sent out a national Request For Proposal advertisement to look at new ways to perform non-destructive testing of drilled shafts. A total of three proposals were received. Although Mo hasn't completed his review, the most promising proposal is from the University of South Florida. They have proposed a testing system that identifies anomalies through the heat of hydration given off as the concrete sets up. Mo will update the Task Force as he continues to evaluate these proposals.

Action Plan:

- Mo to provide update at next meeting.

8. Additional Items

i. Environmental Issues

Alan expressed concern over recent environmental issues he had encountered on a Northwest Region project. During soldier pile construction, a CDF line had become plugged. In clearing the line, about 3 cubic feet of CDF was placed on the ground. Because of this, the work was shut down and the Prime Contractor was cited for high pH in a pond 20 feet away.

Alan commented that Drillers deal with 60,000 gallons of slurry with a pH of 10. This slurry is in direct contact with the soils, and then it is replaced with concrete (also high pH) in direct contact with the soils. In Alan's opinion, this should be a much greater concern that a couple cubic feet of CDF placed on the ground.

Mo was aware of this issue, and he had been in contact with HQ Environmental. According to Environmental, when it is dry weather, there is no permit restriction against placing minor amounts of concrete on the ground surface. However, when it is raining, it could be an issue. Concrete placed on the ground surface when it is raining could wash into surface waters.

Alan explained that it is difficult to understand what all the rules are. He encouraged the State to sit down with Ecology in a high-level meeting to define all the rules. If the rules are well defined, the Contractors can bid conformance with these rules accordingly.

Mo will work on this issue further, and will have additional conversations with HQ Environmental. Cathy Nicholas offered her assistance.

Action Plan:

- Mo to provide updates as needed.

ii. Calcium Carbonate

Al R. was recently approached by a supplier to discuss the possible use of calcium carbonate in concrete. Calcium carbonate is apparently a replacement for fly ash, and provides a benefit of increasing flowability. In some places where calcium carbonate has been used, concrete pump pressures have been cut in half. Calcium carbonate may also be promising in CDF; flowability increases without any increase in strength.

None of the other Task Force Members had any experience using calcium carbonate. Mo suggested that the supplier contact WSDOT to get calcium carbonate on the New Products List.

Action Plan:

- Al R. to put the calcium carbonate supplier in touch with WSDOT Materials Lab.

iii. Anchored Earth Seminar

Alan handed out a brochure on an Anchored Earth Seminar that is being put on by ASCE.

Action Plan:

- No action needed.

iv. Differing Site Conditions on Design/Build Projects

Al R. was recently reviewing a Design/Build project and noticed that the RFP specifically stated that there would be no additional compensation for differing site conditions. Al asked for some feedback on this. If there are obvious differences between the conditions represented by the RFP and the actual conditions encountered, why isn't additional compensation warranted?

The understanding from some of the WSDOT Task Force Members was that differing site conditions are allowed, but the amount of additional compensation is capped at some level. Mo asked Al to provide the specifics of this particular issue and he will look into it further.

Action Plan:

- Al R. to provide specific details Alan to pass on to Mo.

v. Future Meeting Dates

The Task Force established the following future meeting dates:

January 29th
March 6th
April 24th

Action Plan:

- No action needed.

The meeting adjourned at 10:30.